

**RESPONSIVENESS SUMMARY  
CONCERNING EPA'S OCTOBER 31, 2001  
PUBLIC NOTICE PROPOSING NUMEROUS  
FECAL COLIFORM TMDLS  
FOR WATERS IN THE STATE OF ALABAMA**

Public Participation Activity Conducted:

On October 31, 2001, EPA Region 4 published a public notice in the legal advertising section of the Birmingham Post Herald/News. Additionally, Region 4 mailed copies of a detailed public notice to the Alabama Department of Environmental Management (ADEM), the Plaintiffs in the Alabama total maximum daily load (TMDL) lawsuit against EPA (Edward W. Mudd, II et al. v. John Hankinson et al., No. CV-97-S-0714-M, and Alabama Rivers Alliance, Inc. v. John Hankinson et al., No. CV-97-S-2518-M), and persons, identified as potentially interested parties, on a mailing list maintained by Region 4. This public notice requested comments from the public on EPA's proposed fecal coliform TMDLs for the following water quality limited segments in the State of Alabama:

WATERBODY NAME	LOCATION
<b>BLACK WARRIOR RIVER BASIN</b>	
Thacker Creek	Cullman County - from Mulberry Fork to its source
Rock Creek	Winston County - from Smith Lake to Blevins Creek
Long Branch	Cullman County - from Wolf Creek to its source
Crooked Creek	Cullman County - from Smith Lake to its source
<b>CAHABA RIVER BASIN</b>	
Dry Creek	Dallas County - from Dallas County Road 201 to its source

Summary of Public's Comments:

**One person contacted the EPA Region 4 offices, during the public comment period, to request information. The following is a brief summary of that contact by the public:**

1. Deb Berry, President  
Smith Lake Environmental Preservation Committee  
Hoover, Alabama  
November 7, 2001 (written correspondence)

requested a copy of the proposed TMDLs

**The following persons provided written comments during the public comment period:**

1. Mr. Rick Oates  
Alabama Pulp and Paper Council  
555 Alabama Street  
Montgomery, Alabama 36104-4395  
November 27, 2001
2. Mr. Robert R. Reid, Jr.  
November 29, 2001  
(Representing Alabama Audubon Council, Audubon chapter - Birmingham Audubon Society, Alabama Environmental Council, and Alabama Ornithological Society)
3. Ms. Beth Wentzel  
Alabama Rivers Alliance  
2027 2<sup>nd</sup> Avenue North, Suite A  
Birmingham, Alabama 35203  
November 30, 2001
4. Ms. Glenda Dean  
Water Quality Branch  
Water Division  
Alabama Department of Environmental Management  
Post Office Box 301463  
Montgomery, Alabama 36130-1463  
November 30, 2001

Agency's Specific Responses in Terms of Modifications of the Proposed Action or an Explanation for Rejection of Proposals Made by the Public:

The following are the specific comments and EPA's response to each of them.

Comments from the Alabama Department of Environmental Management (ADEM):

General Comments (applicable to each TMDL)

- (1) Several typographical errors were noted throughout the text of the TMDL documents. Due to the relative insignificance of these errors only specific incidents effecting the TMDL calculation are being noted in our comments for correction prior to finalizing the TMDL.

**Response:**

Text corrected.

- (2) The TMDLs should state that these watersheds are listed as being impaired on the 1996, 1998, and 2000 303(d) lists.

**Response:**

Text corrected to clarify the 303(d) list identifying the stream.

- (3) With exception to the Long Branch watershed TMDL, the non-point source assessment loading calculations presented in Section 2.4 are not clear. The indication is that there is either an error in the reported units or in the calculations. Supporting calculations are presented as an attachment to our comments.

**Response:**

Section 2.4, Source Assessment, was modified to clarify loading assumptions. The supporting calculations provided in the comments on the specific TMDLs are the daily loads produced from each source. The fecal coliform production rate is not the same as the load that discharges into the stream as a portion of the fecal coliform is incorporated into the soil or decays prior to entering the stream. In addition, depending on the intensity of the rainfall event and the wash off rate specified in the water quality model, only a portion of the fecal coliform washes off to the stream. In the model, the wash-off rate represents the intensity of the rainfall event that removes 90 percent of the pollutant and varies by land cover.

With regard to the calculations provided on the load contribution from leaking septic systems, the correct concentration of fecal coliform bacteria in human effluent should have been 10,000 counts/100ml and not  $10^6$  counts/100 ml as reported in the TMDL document. This difference of 100 accounts for the discrepancy in the load. According to literature values, the range of fecal coliform concentration from human sources ranges from  $10^4$  to  $10^7$  counts/100 ml. The lower end of the reported concentrations was used in the load calculation as leaking septic systems were modeled as point sources discharging directly into the stream. In reality, the discharge would be through the groundwater where a portion of the fecal coliform would bind to the soil.

- (4) Because of the calculation or unit errors in non-point source loadings the load allocation (LA), the total load or TMDL, and the required reductions as stated in the document are incorrect.

**Response:**

It is not appropriate to assume that all the fecal coliform bacteria produced from the various sources (as is calculated in the attachments) discharges into the stream. A large portion of the fecal coliform produced either decays or is incorporated into the soil before it reaches the stream. The TMDL documents were revised to state that leaking septic systems and animals with access to streams discharge directly into the stream.

- (5) Non-point source load allocations made for the potential contributions resulting from land application of animal manure were not specified in the TMDL.

**Response:**

Text corrected.

- (6) Drainage areas should be further clarified as to whether the area defined refers to the impaired segment or the entire watershed.

**Response:**

The drainage area represents the area upstream of the monitoring station discharging to the stream. Text was modified in all TMDLs.

- (7) With exception to the Long Branch watershed TMDL, the meteorological and USGS stations used to obtain local meteorological data and local watershed and stream flow data were not identified.

**Response:**

In the Rock Creek, Thacker Creek, and Crooked Creek TMDLs, the hydrology calibration is based on the USGS gage on Sipsey Fork (USGS 02450250). The Sipsey Fork hydrology calibration uses the meteorological data collected at Huntsville. The Dry Creek TMDL has been revised to base the hydrology on a continuous USGS gage located on Shades Creek, as this gage is closer to the Dry Creek watershed than the Sipsey Fork gage. The meteorological station used in the simulation for Rock Creek, Thacker Creek, and Crooked Creek was the Huntsville station as this is the closest station to the watersheds where a WDM file exists (Note: a WDM, or watershed data management, file is a special binary file that can efficiently manage a large number of time series data. Special programs are needed to modify the data stored in a WDM file.). For the Dry Creek model, the Montgomery weather station was used in the simulation. In all TMDLs, the text was modified to clearly identify the hydrology and weather stations used in the simulations.

- (8) With exception to the Long Branch watershed TMDL, the scale should be expanded for the geometric mean plots in Section 2.6.4 (Critical Conditions). Expansion of the scale would provide a better view of critical period.

**Response:**

Figures modified in final TMDL documents.

- (9) The TMDLs should list the upstream and downstream locations for the impaired portions of each stream.

**Response:**

The impaired reaches are from the headwaters to the confluence with the downstream reach. The figures show the entire reach and this corresponds to the impaired segments.

- (10) The TMDLs are limited in detail on how loads and reductions are calculated. All data and copies of the WCS spreadsheets with assumptions should be included.

**Response:**

An appendix was added to all of the TMDL documents to provide examples of the load calculations. The Excel spreadsheets used to generate the loads are included in the Administrative Record of each TMDL.

- (11) The load reductions do not seem realistic when considering the data for some of the streams supports delisting. This is particularly true for Rock Creek and Thacker Creek.

**Response:**

Water quality data collected in 1991 and reported in the Alabama Clean Water Strategy Water Quality Report (December 1992) indicate fecal coliform bacteria levels of 17,000 counts/100 mL in June 1991. A mass balance calculation using the 1991 data was used to check the TMDL value and percent reduction proposed in the Rock Creek TMDL. Using these data, the resulting TMDL is about  $8.13 \times 10^{13}$  counts/30 days and an 88% reduction. The proposed TMDL for Rock Creek is  $6.98 \times 10^{12}$  counts/30 days and an 87% reduction from storm water runoff, and a 75% reduction from septic systems and other sources (i.e., cattle in streams, illicit discharges, etc.).

Mass Balance Equation:  $\text{Load} = Q * \text{Conc} * \text{Conv}$ .

Where:  $Q$  = flow, cfs

Conc = bacteria concentration, counts/100mL

Conv =  $7.481 \text{ gal/ft}^3 * 3.785 \text{ L/gal} * 1000\text{mL/L} * 3600*24*30 \text{ sec/30-day}$

Since flow is not monitored on Rock Creek, an estimate of flow was made using monitor data at the Sipsey Fork gage and a ratio of the drainage areas of the two streams. In June 1991, the mean flow at the Sipsey Fork gage was about 63.4 cfs (Source: USGS web page for monthly mean streamflow at gage 02450250, Sipsey Fork near Grayson, AL). The

Sipsey Fork drainage area is about 92.1 square miles. The drainage area of Rock Creek is about 80.3 square miles).

$$Q = 80.3/92.1 * 63.4 \text{ cfs} = 55.3 \text{ cfs}$$

A mass balance calculation was used to check the Thacker Creek TMDL and a similar load resulted as presented in the TMDL. However, the percent reduction required to obtain water quality standards was significantly less, 10 percent using the mass balance approach as compared to 54 percent, which was proposed in the TMDL. Without more detailed water quality data it is unlikely that a 10 percent reduction in storm water runoff (i.e., the largest source of fecal coliform bacteria identified from the water quality model) would provide adequate protection of the waterbody.

### Specific Comments

#### *Dry Creek Watershed*

- (12) Reference to the Crooked Creek watershed is made throughout the document text. It appears from this that the Crooked Creek TMDL document was used as a template, but not all of the relevant information (i.e., sample stations) was changed to reflect the Dry Creek watershed. The information provided in the TMDL needs to be verified as being applicable to the Dry Creek watershed and all references to Crooked Creek should be removed.

#### **Response:**

Text corrected.

- (13) In the non-point source assessment the calculated load contribution from wildlife (background load) was not provided.

#### **Response:**

Text corrected.

- (14) The water quality sample station referenced in the Executive Summary on page iv of the TMDL is incorrectly identified as "CRK-5". The station identification is "Dry-1996".

#### **Response:**

Text corrected.

- (15) Due to the close proximity to the watershed the Montgomery or Selma weather station should be used as a source for meteorological data rather than Huntsville.

#### **Response:**

The TMDL was revised to use the Montgomery weather station in the simulation.

- (16) The report states that Dry Creek is predominately agricultural with little urban or developed area. However, Table 1 shows the Dry Creek watershed as being 30.6% forestland. For this reason forestland should be mentioned in the land use description.

**Response:**

Text corrected.

- (17) Given the location of the watershed the Sipsey Fork USGS gage is not appropriate for use in hydrologic calibration of Dry Creek.

**Response:**

The TMDL was revised to base the hydrology on Shades Creek. This stream is located in the same hydrologic unit as Dry Creek. The USGS operates a continuous flow gage on Shades Creek near Greenwood, AL (USGS 02423630).

*Long Branch Watershed*

- (18) In the non-point source assessment the calculated load contribution from wildlife (background load) was not provided.

**Response:**

Text corrected.

- (19) The discussion provided in the Executive Summary, page iv, should include a statement that currently there are no permitted point source discharges in the watershed.

**Response:**

Text corrected.

- (20) The total area for the land use distribution presented in Table 1 should be 644 acres, not 645 acres.

**Response:**

Text corrected.

- (21) The average annual flow calculated in Section 2.5.2, Model Setup (page 5) is incorrect. Using a drainage area of 1.0 sq. miles, as provided earlier in the Executive Summary, the correct annual average flow should be 1.65 cfs. This error results in the mis-calculation of the existing fecal coliform loading rates, the TMDL, and the required percent reduction.

**Response:**

The existing and TMDL loads were recalculated using an average annual flow of 1.65 cfs and resulted in loads of  $5.74 \times 10^{11}$  and  $2.42 \times 10^{11}$  counts/30 days. The percent reduction is 58 percent, and is the same as the reduction proposed in the draft TMDL. The TMDL was corrected to include the above changes.

- (22) The data used for listing the stream on the 1996 303(d) List can not be data collected from 1997 and 2001 as stated in the Executive Summary on page iv.

**Response:**

The TMDL was revised to refer to the 1998 303(d) List rather than the 1996 list.

- (23) In the wildlife non-point source assessment discussion in Section 2.4.2 on page 8 the incorrect assumption is made that cattle operations do not use the stream due to limited number of cattle and periods of dry flows.

**Response:**

The TMDL was revised to state that cattle may have access to streams and this could be a source of fecal coliform bacteria in the stream. However, in previous discussions with personnel in the agricultural community in other states in Region 4, EPA was told that streams that routinely flow dry would not be the primary water supply source for cattle operations. This is the rationale EPA tried to convey on page 8 of the TMDL.

*Thacker Creek Watershed*

- (24) The USGS gage station number for the Sipsey Fork gage is incorrect. The correct gage number is 02450250.

**Response:**

Text corrected.

- (25) In the non-point source assessment the calculated load contribution from wildlife (background load) was not provided.

**Response:**

Text corrected.

*Rock Creek Watershed*

- (26) All references made to the location of the Rock Creek watershed as Wilson County should be corrected to Winston County.

**Response:**

Text corrected.

- (27) The USGS gage station number for the Sipsey Fork gage is incorrect. The correct gage number is 02450250.

**Response:**



Text corrected.

- (28) The water quality sample station referenced in the Executive Summary on page iv of the TMDL is incorrectly identified as “CRK-5”. The station identification is “RCK-4”

**Response:**

Text corrected.

- (29) In the non-point source assessment the calculated load contribution from wildlife (background load) was not provided.

**Response:**

Text corrected.

- (30) In the water quality assessment discussion the statement is made that individual samples exceeded the maximum daily value of 2000 counts/100 ml. The data presented in Table 2 of this discussion does not support this statement.

**Response:**

The TMDL was revised to include the 1991 data contained in the December 1992 ADEM report entitled “Alabama Clean Water Strategy Water Quality Assessment Report”. In June 1991, fecal coliform concentration was reported at 17,000 counts/100 ml, and exceeded the individual water quality criteria of 2000 counts/100 ml.

- (31) In the point source assessment the permitted design flow for the point source (Addison High School) is incorrectly listed as 0.0116 mgd, the correct design flow is 0.016 mgd.

**Response:**

The water quality model was revised with the correct flow rate for the point source and the TMDL document modified accordingly.

- (32) The location of the point source should be provided on a map in the report.

**Response:**

Coordinates for this facility were not provided to EPA and as a result it was not possible to include the location of this facility on the location map.

*Crooked Creek Watershed*

- (33) The calculated non-point source assessment load contribution from wildlife should be 1.44E13 counts/acre/day, not 1.88E7 counts/acre/day.

**Response:**

The load contribution of  $1.44\text{E}+13$  counts/acre/day represents the production rate and not the load available to wash off to the stream. The wash off rate (i.e.,  $1.88\text{E}+07$ ) incorporates decay and absorption of fecal coliform bacteria into the soil and is the more appropriate rate to use in the model.

- (34) The USGS gage station number for the Sipsey Fork gage is incorrect. The correct gage number is 02450250.

**Response:**

Text corrected.

- (35) The data presented in Table 2 of the Water Quality Assessment needs correction. The correct date that should be listed for the data collected in June 1997 is 6/11/1997.

**Response:**

Text corrected.

- (36) In the wildlife non-point source assessment the value assumed for the deer population density was not stated.

**Response:**

Text corrected.

- (37) In Section 2.5.2 (Model Setup) the data period referenced for the continuous simulation period of 10-years should be corrected to read (1/1/88 to 12/31/98).

**Response:**

Text corrected.

**Comment from Alabama Pulp and Paper Council**

While these particular TMDLs are generally uncomplicated, they do illustrate a major problem with the whole TMDL process. That is: 1) the listing on the 303(d) list was made on a minimal amount of data. Both Thacker Creek and Rock Creek appear to be on the list based on a single data point being out of compliance, and the Thacker Creek data was taken 10 years ago; 2) the TMDLs are then developed on a similar small amount of data; and 3) while these TMDLs are relatively uncomplicated, there appears to be significant calculation errors in them.

**Response:**

The calculation errors were corrected in all of the TMDL documents.

## **Comments from the Alabama Rivers Alliance**

1. The TMDL should consider site-specific practices and problems. The non point source model appears to lump all lands of similar use together and assumes that pollutant contributions from all similar land uses are uniform. There seems to be no difference in modeling between a land use that utilizes good management practices and the same land use, but with poor practices.

### **Response:**

In developing the TMDLs, ADEM and NRCS were contacted for site-specific practices and problems; however, none were obtained. The TMDLs are based on general literature values and common landuse practices. During the implementation stage of the TMDLs additional watershed information regarding landuse practices should be obtained and if necessary the TMDLs may be revised should significant data become available. In the TMDLs, the worse case scenario is assumed, that being the maximum concentration discharging to the stream after decay and absorption to the soils are considered.

2. There are no specific recommendations for specific problem areas, which would be useful in prioritizing restoration projects. Without such attention to site specific problems, there is not reasonable assurance that the necessary load reductions will be achieved, and the TMDL has limited use.

### **Response:**

Implementation plans are not part of TMDLs, but are to be developed by States after TMDLS are established, as part of their C.P.P. The watershed approach used in developing the TMDL requires everyone in the drainage basin to be responsible for implementing conservation practices to reduce fecal coliform contamination. The TMDL provides specific reductions for controlling leaking septic systems, storm water runoff, and other miscellaneous sources of contamination (e.g., cattle in stream, illicit discharges, etc). Given the limited data available to develop the TMDLs, additional monitoring data are required to evaluate the extent of the impairment and probable sources before detailed individual source reductions can be made.

3. Justification should be provided that shows that the water quality standards will be protected using the units in which the loads are expressed. The fecal coliform load is shown as counts per 30 days. Evidence should be provided that all criteria are met if this load is achieved. In particular, it should be shown that fecal coliform does not exceed 2000/100 mL in any sample. A simple graph of daily output should be sufficient to show this.

### **Response:**

The TMDL documents are revised to include a graphic comparing simulated fecal coliform concentrations to the instantaneous criteria.

4. The method for determining where reductions should be imposed needs justification. It is unclear what method was used for determining how the TMDL would be allocated or why that method was used. It is not clear whether the proposed reduction scenario would be either the least cost scenario, the most equitable scenario, or the scenario that could most reliably be implemented. Given that there are many possible allocations that would achieve the TMDL endpoints, justification should be provided for the allocation determined.

**Response:**

The TMDL documents were modified to clarify the proposed allocation scenario.

5. “Miscellaneous sources” need explanation. In the summary of predicted existing loadings, there is a category of miscellaneous sources that includes “livestock with stream access as well as an estimate of unknown instream sources and illicit discharges.” It is unclear what these unknown and illicit sources are. Particularly as the TMDLs call for a reduction of as much as 95% of this category, these sources should be better explained.

**Response:**

Unknown sources of fecal coliform bacteria includes illicit discharges from sources such as hunting cabins, straight pipes, and other sources that don’t have a permit but impact the base concentration of the stream.

6. More specific prescription for control of CAFO contributions should be provided. Although the TMDL reports do not state so, CAFOs are point sources that are regulated under the NPDES permitting program by coverage under general permits. If these facilities may be causing or contributing to the fecal coliform impairments in these watersheds, as stated in the TMDL reports, they should be given individual permits with individual requirements that ensure that they do not contribute to violations.

Land application rates are limited by CAFO regulations and recommendations. If, as the TMDLs suggest, those application rates are so high that they are contributing to violations of fecal coliform criteria, the recommendations and regulations should be revised. A recommendation for such revision should be included in the TMDL.

**Response:**

Given the limited water quality data, it is very difficult to tell from a single grab sample analyzed for fecal coliform if the source of the contamination is human or animal. Given the general characteristics of the watershed (i.e., land cover, animal and human population) it is suspected that agriculture is the more probably source than urban areas. The general CAFO permit does not permit discharge except during the 25-year storm event, and then they are only allowed to discharge process wastewater. The TMDLs state that based on the large number of poultry operations in the watersheds, it is possible that these CAFOs could be contributing to water quality impairment, but without additional data this is only suspected. The TMDLs were revised to require compliance with the general CAFO permit.

7. The margin of safety (MOS) is inconsistent between the TMDLs and not well justified. Some of the TMDLs include both an explicit MOS of 10% and an implicit margin of safety due to conservative assumptions in the model. There is no explanation regarding the decision to allocate the MOS differently in each. Furthermore, there is no justification that the MOS takes into account all uncertainty associated with the TMDL development. Particularly given that there was very little data upon which the model was based, the MOS should be significant.

**Response:**

All of the TMDLs have been modified to include a minimum of 15 percent MOS and for most of the TMDLs, the MOS ranges from 25-30 percent. The MOS is based on the difference in simulated instream fecal coliform concentration between existing and TMDL conditions. As far as the implicit MOS, the documents have been revised to clarify where conservative assumptions are used in the model.

8. More information about the data is requested. Please verify that proper QA/QC protocols were followed for the data used in the model calibration. Specifically, verify that all fecal coliform samples used were not held longer than the maximum 6 hours before they were set up in the laboratory.

**Response:**

The fecal coliform data received from ADEM did not have any qualifiers next to the reported concentrations to indicate problems in the sampling or analysis. Additional information regarding QA/QC protocols was not available during TMDL development.

9. The Dry Creek TMDL contains the name Crooked Creek in many places. This is presumably a typographical error.

**Response:**

Text corrected.

Description of the Effectiveness of the Public Participation Program:

The public participation process in the matter of EPA's establishment of total maximum daily loads for pollutants and waters in the State of Alabama was considered to be an important one. The number of comments received from the public, including the Alabama Department of Environmental Management and local organizations, was sufficient to demonstrate that the opportunity for public participation in this matter was effective.